Marshall Street Viaduct
Marshall St. between College and 21st Sts.
Richmond
Virginia

HAER No. VA-27

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
Washington, D.C. 20240

HISTORIC AMERICAN ENGINEERING RECORD

VA-27

MARSHALL ST. VIADUCT

Date: 1910-11, Erected.
1933-34, Viaduct extensively repaired.
1953, Trolley tracks removed.
1970, Viaduct closed for inspection.

Location: Marshall St., between College and 21st Sts. Richmond, Virginia.

Builder: Burton Construction Company.

Owners: 1911-14, Richmond & Henrico Railroad Comapny.
1914-16, Richmond Railway & Viaduct Company.
1916-33, Virginia Electric Power Company.
1933-48, Richmond Bridge Corpoation.
1948-Present, City of Richmond.

Significance: Marshall St. Viaduct is a representive example of early 20th century steel viaduct construction. It is also a good example of the methods used by urban railway companies in overcoming long grades.

Transmitted by: Dan Clement, 1983.

Notes on original plan and construction of viaduct:

Originally constructed with a 33 ft. roadway, curb to curb, with two trolley lines in the center. Two 4 ft. 6 in. concrete sidewalks with 4 ft. latticed steel hand rails were provided. The roadway surface was timber planks supported by concrete deck which rested on transverse roadway beams outside the trolley rails and on the trolley beams in the track area. Transverse beams rested directly on the top chord of the trusses and were framed into the longitudinal trolley beams, which in turn were supported by floor beams at the panel points of the trusses. The truss spans were from sixty to eighty feet, but one 120 ft. span and two 40 ft. spans were required; all spans supported by 20 ft. trestle towers with trusses continuous over one tower and expansion at the next. The entire superstructure was of riveted fabricated steel plates, angles and channels. The substructure consisted of two abutments and fifty-five pairs of concrete pedestals on spread footings. The floor system was designed to carry thirty-five ton trolley cars on each of the two trolley tracks, or two thirty ton trolley cars and two twelve ton road rollers on the roadway. Girders and columns were designed to carry a live load of 4000 pounds per lineal foot, with maximum unit stresses of 15,000 lb. per sq. in. in compression and 18,000 lb. per sq. in. in tension. Material was specified to be "Medium Steel on Theo. Cooper's General Specifications for Steel Highway and Electric Railway Bridges - 1901."

Notes on known alterations and additions:

1933-34 Viaduct extensively repaired by the Wisconsin Bridge and Iron Company. The roadway was widened to 36 ft. by the addition of 18 in. concrete gutters on each side and was resurfaced with Kentucky Rock Asphalt. 5 ft. timber sidewalks were provided on each side, behind steel curbs. Trusses and columns were strengthened and repaired. Top chords of trusses were cut at previously continuous points over alternate towers to provide a top chord and roadway relief joint at all towers; bottom chord expansion was still provided only at alternate towers; roadway expansion was provided at all truss expansion and relief points. New trolley tracks installed. Repairs made to concrete pedestals and to truss members and connections. The whole structure was painted (three coats). An electric lighting system for the roadway was provided.

1948 Viaduct repainted
1953 Trolley tracks removed and roadway resurfaced
1958 Inspected, cleaned, painted, repaired

Since 1948, maintenance has included periodic asphalt roadway surface repairs, replacement of sidewalk planks and broken rivets, cleaning and spot painting, repair to spalls and broken concrete, etc.

1970 Viaduct closed July for extensive inspection

Primary and unpublished sources:

City of Richmond, Chancery Court Records, Deed Book 229-D, page 491 and Deed Book 386A, pages 194-221.

____ Clerk's Office, Ordinances, 1902, 1933

____ Engineer's Office. Correspondence, special provisions, estimates, Marshall Street Viaduct. Special reports as follows:

"Report on Inspection of Marshall Street Viaduct" dated July 13, 1965. Parsons, Brinckerhoff, Quade and Douglas, New York.

"Report to the City of Richmond, Virginia on the Marshall Street Viaduct" dated May 6, 1958. Modjeski and Masters, Harrisburg, Pennsylvania.

"Specifications for Repairs and Additions to Marshall Street Viaduct Richmond, Va. for Richmond Bridge Corporation." dated July 28, 1933. Allen J. Saville, Inc. and Lee, Smith and Van Dervoort, Inc. Richmond, Va. Engineers; Alfredo C. Janni, New York, Consulting Engineer.

Commonwealth of Virginia, State Corporation Commission, Annual Reports of the Richmond and Henrico Railway Company, 1912-1914.